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Intercomputer Functional Requirements Specification

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1 Introduction

1.1 Organization of this Document
This document consists of 13 major sections and can be navigated using the links in the Table of Contents.

1. Introduction - summarizes the overall purpose and structure of the functional specification document

2. Methodology – provides the methodology followed in developing these functional specifications.

3. Architecture Components Diagram – identifies and defines the major components of the system

4. Systems Identified – identifies and defines systems and their components

5. Business Use Cases – use cases for the system and actors identified

6. Business Data Objects – lists all the business data objects identified through the use cases

7. Interaction Diagrams – collaboration diagrams

8. Class Diagrams – class diagrams based on the collaboration diagrams developed

9. State and Activity Diagrams – state and activity diagrams

10. System Requirements – system requirements identified for the prototype and for the "ideal" system

11. Assumptions – summary of assumptions identified in the use cases

12. Terminology – terminology definitions

13. Appendixes – clarifications from FSTC

Intercomputer Functional Requirements Specification

1.2 Purpose

The purpose of this document is to provide the reader the system requirements and specifications for the proposed Intercomputer Demo System.
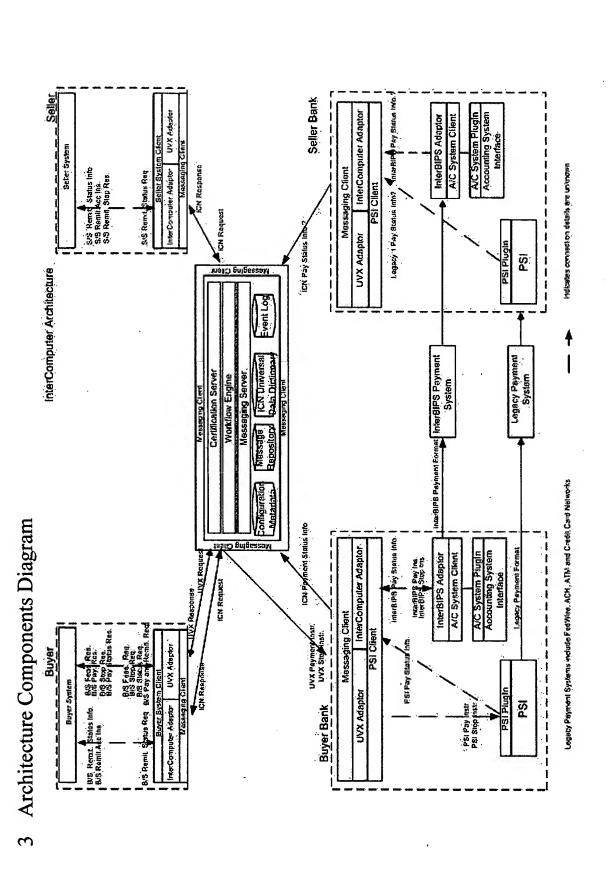
This document will provide the foundation for technical design.

The intended audience will include the Functional, Engineering and QA teams, and potential users of the system.

Intercomputer Functional Requirements Specification

2 Methodology

The functional specifications document is developed as per the UML 1.3 specification

Intercomputer Functional Requirements Specification

3 Architecture Components Diagram

InterComputer Architecture

Seller

Seller System

S/S Remit. Status Info.
S/S Remit Act. Inf.
S/S Remit. Stop Res.

S/S Remit. Status Req.

Seller System Client
InterComputer Adaptor
UVX Adaptor
Messaging Client

ICN Response

ICN Request

Messaging Client

Certification Server
Workflow Engine
Messaging Server

Configuration Metadata
Message Repository
ICN Universal Data Dictionary
Event Log

Messaging Client

Buyer

Buyer System

B/S Remt. Status Info.
B/S Remit Act. Inf.

B/S Feed. Res.
B/S Pay. Res.
B/S Stop Res.
B/S Pay Status Res.

B/S Feed. Req.
B/S Pay Req.
B/S Stop Req.
B/S Pay and Remit. Req.

B/S Remit. Status Req.

Buyer System Client
InterComputer Adaptor
UVX Adaptor
Messaging Client

UVX Response
ICN Request
ICN Response
UVX Request

Buyer Bank

Messaging Client
UVX Adaptor
InterComputer Adaptor
PSI Client

UVX Payment Instr.
UVX Stop Instr.

ICN Payment Status Info

PSI Pay Status Info

PSI Pay Instr.
PSI Stop Instr.

InterBIPS Pay Ins.
InterBIPS Stop Ins.

InterBIPS Adaptor
A/C System Client
A/C System Plugin
Accounting System Interface

PSI Plugin
PSI

Legacy Payment Format

Legacy Payment System

InterBIPS Payment Format

InterBIPS Payment System

ICN Pay Status Info

Seller Bank

Messaging Client
InterComputer Adaptor
UVX Adaptor
PSI Client

InterBIPS Pay Status Info

Legacy 1 Pay Status Info

InterBIPS Adaptor
A/C System Client
A/C System Plugin
Accounting System Interface

PSI Plugin
PSI

Indicates connection details are unknown

Legacy Payment Systems include FedWire, ACH, ATM and Credit Card Networks

3.1   Definition of Components Identified

3.1.1   UVX Adaptor at Buyer

The UVX Adaptor at Buyer handles data mapping and transformations between the UVX data format and the Buyer System data format. The UVX Adaptor at Buyer receives data in the Buyer System data format and UVX data format. The UVX Adaptor at Buyer delivers data in the Buyer System data format and UVX data format.

3.1.2   UVX Adaptor at Seller

The UVX Adaptor at Seller handles data mapping and transformations between the UVX data format and the Seller System data format. The UVX Adaptor at Seller receives data in the Seller System data format and UVX data format. The UVX Adaptor at Buyer delivers data in the Seller System data format and UVX data format.

3.1.3   ICN Universal Data Dictionary

The ICN Universal Data Dictionary defines both the UVX messaging set and the ICN messaging set. The ICN Universal Data Dictionary defines mapping and conversion information between internal and external data formats. Internal data formats are UVX and ICN. The different Buyer Systems, Seller Systems and Payment System Interfaces define external data formats.

3.1.4   UVX Adaptor at the Buyer Bank

The UVX Adaptor at Buyer Bank handles data mapping and transformations between the UVX data format and the Payment System interface data format. The UVX Adaptor at Buyer Bank delivers *Payment* and *Stop Instructions* to the Payment System Interface in the appropriate payment system format.

3.1.5   Workflow Engine

The Workflow Engine defines and executes different workflows. The Workflow Engine creates UVX and ICN Business Data objects based on the ICN Data Dictionary definitions. The Workflow Engine handles mapping and conversion between business data objects. The Workflow Engine executes data validation and business validation rules. The Workflow Engine creates *Events*.

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3.1.6   Messaging Server
The Messaging Server receives and routes messages between the Adaptors and the Workflow Engine. The Messaging Server creates *Events*.

3.1.7   Event Log
The Event Log stores *InterComputer Events* created by the Workflow Engine and the Messaging Server.

3.1.8   Message Repository
The Message Repository stores all messages created by the Platform.

3.1.9   Configuration Metadata
The Configuration Metadata stores configuration metadata.

3.1.10   Certification Server
The Certification Server handles digital signature verification of Messages.

3.1.11   InterBIPS Adaptor at the Buyer Bank
The InterBIPS Adaptor at the Buyer Bank accepts *Instructions* from the UVX Adaptor. The InterBIPS Adaptor provides *Accounting Instructions* to the Accounting System Interface at the Buyer Bank. The InterBIPS Adaptor provides *Payment Status information* to the InterComputer Adaptor. The InterBIPS Adaptor at the Buyer Bank transforms data from the InterBIPS data format to the Accounting System Interface data format.

3.1.12   InterBIPS Adaptor at the Seller Bank
The InterBIPS Adaptor at the Seller Bank provides *Accounting Instructions* to the Accounting System Interface at the Seller Bank. The InterBIPS Adaptor at the Seller Bank transforms data from the InterBIPS data format to the Accounting System Interface data format.

3.1.13 InterBIPS Payment System

The InterBIPS Payment System receives *InterBIPS Instructions*. The InterBIPS Payment System routes *Instructions* to the destination InterBIPS Adaptor.

3.1.14 Buyer System (B/S)

The B/S is the system that the Buyer interacts with. The B/S interacts with the Intercomputer Network.

3.1.15 Seller System (S/S)

The S/S is the system that the Seller interacts with. The S/S interacts with the Intercomputer Network

3.1.16 InterComputer Adaptor at Buyer

The InterComputer Adaptor at Buyer handles data mapping and transformations between the InterComputer data format and the Buyer System data format. The InterComputer Adaptor at Buyer receives data in the Buyer System format and in ICN data format. The InterComputer Adaptor at Buyer delivers data in the Buyer System format and ICN data format.

3.1.17 InterComputer Adaptor at Seller

The InterComputer Adaptor at Seller handles data mapping and transformations between the InterComputer data format and the Seller System data format. The InterComputer Adaptor at Seller delivers data in the appropriate Seller System format and ICN data format. The InterComputer Adaptor at Seller receives data in the appropriate Seller System format and the ICN data format.

3.1.18 InterComputer Adaptor at the Buyer Bank

The InterComputer Adaptor at Buyer Bank handles data mapping and transformations between the InterComputer data format and the Payment System interface data format. The InterComputer Adaptor at the Buyer Bank receives *Payment Status Information* from the Payment System Interface in the appropriate payment system format

4 Systems Identified

The following Systems have been identified

1. InterComputer Network
2. InterComputer Network Platform
3. ICN Server
4. InterBIPS
5. Buyer System
6. Seller System
7. Messaging System
8. Bank PSI

4.1 Definition of Systems

4.1.1 Intercomputer Network

The Intercomputer Network is composed of the ICN Platform and the InterBIPS Platform.

4.1.2 ICN Platform

The ICN Platform handles all the UVX and ICN transactions. The ICN Platform is a subsystem of the Intercomputer Network.

4.1.3 ICN Server

An ICN Server is a subset of the ICN Platform

4.1.4 InterBIPS

The InterBIPS Platform handles all InterBIPS transactions.

4.1.5 Buyer System (B/S)

The B/S is the system that the Buyer interacts with. The B/S interacts with the Intercomputer Network.

4.1.6 Seller System (S/S)

The S/S is the system that the Seller interacts with. The S/S interacts with the Intercomputer Network.

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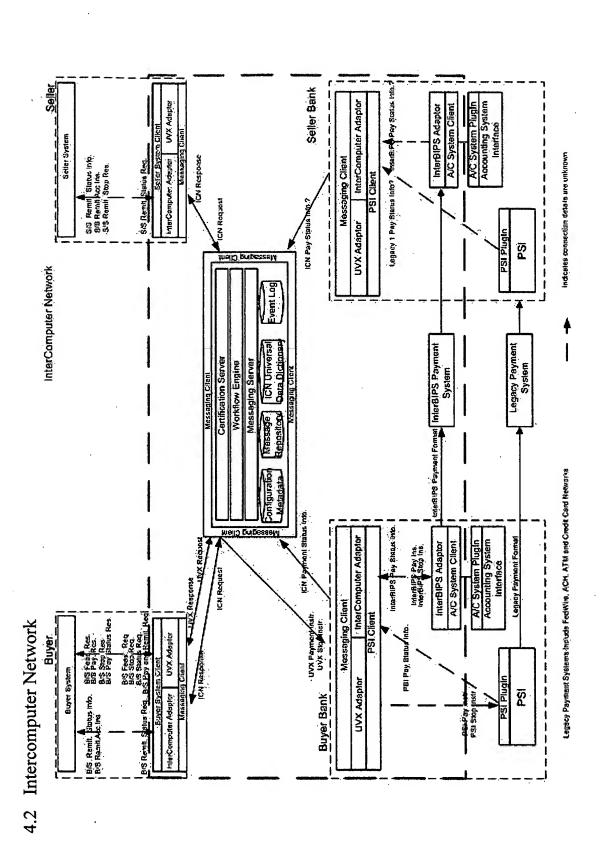
4.1.7   Messaging System
The Messaging System is a subsystem of the ICN Platform

4.1.8   Bank PSI
The components of the Bank Payment System Interface are the Bank Legacy Systems, InterBIPS Adaptor and the Accounting System Interface.

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Intercomputer Functional Requirements Specification

4.2 Intercomputer Network

The Intercomputer Network has the following components

4.2.1   UVX Adaptor at Buyer

4.2.2   UVX Adaptor at Seller

4.2.3   ICN Universal Data Dictionary

4.2.4   UVX Adaptor at the Buyer Bank

4.2.5   Workflow Engine

4.2.6   Messaging Server

4.2.7   Event Log

4.2.8   Message Repository

4.2.9   Configuration Metadata

Intercomputer Functional Requirements Specification

Intercomputer Functional Requirements Specification

4.3 ICN Platform

The ICN Platform has the following components

Intercomputer Functional Requirements Specification

Intercomputer Functional Requirements Specification

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Intercomputer Functional Requirements Specification

4.4 ICN Server

Intercomputer Functional Requirements Specification

The ICN Server has the following components

4.4.1   Workflow Engine

4.4.2   Messaging Server

4.4.3   Certification Server

Intercomputer Functional Requirements Specification

4.5 InterBIPS

Intercomputer Functional Requirements Specification

The InterBIPS Platform has the following components

4.5.1   InterBIPS Adaptor at the Buyer Bank

4.5.2   InterBIPS Adaptor at the Seller Bank

4.5.3   InterBIPS Payment System

Intercomputer Functional Requirements Specification

4.6 Buyer System

Indicates connection details are unknown

Legacy Payment Systems include FedWire, ACH, ATM and Credit Card Networks

Intercomputer Functional Requirements Specification

The Buyer System consists of the following components

4.6.1   Buyer System (B/S)

Intercomputer Functional Requirements Specification

4.7 Seller System

The seller System consists of the following components

4.7.1   Seller System

Intercomputer Functional Requirements Specification

4.8 Messaging System

Messaging System

Seller

Seller System

Seller System Client
UVX Adaptor
Messaging Client
InterComputer Adaptor
Messaging Client

S/S Remit. Status Info.
B/S Remit. Acc. Info.
S/S Remit. Stop Res.

S/S Remit. Status Req.

ICN Response
ICN Request

ICN Pay Status Info.?

Messaging Client
Certification Server
Workflow Engine
Messaging Server
Messaging Client

Configuration Metadata
Message Repository
ICN Universal Data Dictionary
Event Log

ICN Payment Status Info

Buyer

Buyer System

Buyer System Client
UVX Adaptor
Messaging Client
InterComputer Adaptor
Messaging Client

B/S Remit. Status Info.
B/S Remit. Acc. Info.

B/S Remit Status Res.
B/S Feed. Res.
B/S Pay. Res.
B/S Stop Res.
B/S Pay Status Res.

B/S Feed. Req.
B/S Pay Req.
B/S Stop Req.
B/S Pay and Remit. Req.

UVX Response
ICN Request
ICN Response

UVX Request

UVX Payment Instr.
UVX Stop Instr.

Buyer Bank

Messaging Client
UVX Adaptor
InterComputer Adaptor
PSI Client

InterBIPS Pay Status Info

InterBIPS Pay Ins.
InterBIPS Stop Ins.

InterBIPS Adaptor
A/C System Client

A/C System Plugin
Accounting System Interface

PSI Pay Status Info

InterBIPS Payment Format

InterBIPS Payment System

Legacy Payment Format

Legacy Payment System

PSI Pay Instr.
PSI Stop Instr.

PSI Plugin
PSI

Seller Bank

Messaging Client
UVX Adaptor
InterComputer Adaptor
PSI Client

InterBIPS Pay Status Info.?

Legacy Pay Status Info.?

InterBIPS Adaptor
A/C System Client

A/C System Plugin
Accounting System Interface

PSI Plugin
PSI

Legacy Payment Systems include FedWire, ACH, ATM and Credit Card Networks.

Indicates connection details are unknown

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The UVX Messaging System has the following components

4.8.1   Messaging Server

4.8.2   UVX Adaptor at Buyer

4.8.3   UVX Adaptor at Seller

4.8.4   UVX Adaptor at Buyer Bank

4.8.5   InterComputer Adaptor at Buyer

4.8.6   InterComputer Adaptor at Seller

4.8.7   InterComputer Adaptor at the Buyer Bank

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4.9 Bank PSI

Seller

Seller System

S/S Remit. Status Info.
S/S Remit Acc Ins.
S/S Remit. Stop Res.

S/S Remit Status Req.

Seller System Client
InterComputer Adaptor | UVX Adaptor
Messaging Client

ICN Response

ICN Request

Bank PSI

ICN Pay Status Info.?

Messaging Client
Certification Server
Workflow Engine
Messaging Server
Configuration Metadata | Message Repository | ICN Universal Data Dictionary | Event Log
Messaging Client

Seller Bank

Messaging Client
UVX Adaptor | InterComputer Adaptor
PSI Client

Legacy 1 Pay Status Info.? InterBIPS Pay Status Info.?

InterBIPS Adaptor
A/C System Client
A/C System Plugin
Accounting System Interface

PSI Plugin
PSI

InterBIPS Payment Format InterBIPS Payment System

Legacy Payment System

Indicates connection details are unknown

Buyer

Buyer System

B/S Remit. Status Info.
B/S Remit Acc Ins.

B/S Fees Res.
B/S Pay Res.
B/S Stop Res.
B/S Pay Status Res

B/S Fees Req
B/S Stop Req.
B/S Status Req.
B/S Pay and Remit. Req

Buyer System Client
InterComputer Adaptor | UVX Adaptor
Messaging Client

UVX Response
ICN Request
ICN Response

UVX Payment Instr.
UVX Stop Instr.

ICN Payment Status Info.

Buyer Bank

Messaging Client
UVX Adaptor | InterComputer Adaptor
PSI Client

PSI Pay Status Info.

InterBIPS Pay Status Info.
InterBIPS Pay Info.
InterBIPS Stop Ins.

InterBIPS Adaptor
A/C System Client
A/C System Plugin
Accounting System Interface

Legacy Payment Format

PSI Pay Instr.
PSI Stop Instr.

PSI Plugin
PSI

Legacy Payment Systems include FedWire, ACH, ATM and Credit Card Networks

5 Business Use Cases

Business Use Cases have been developed for the following Systems

1. ICN Platform

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Intercomputer Functional Requirements Specification

5.1 ICN Platform

5.1.1 System
The system has been identified as the **ICN Platform**

5.1.2 Components
The components within the ICN Platform are indicated in <u>ICN Platform</u>

Intercomputer Functional Requirements Specification

5.1.3   Use Case Diagram

Secondary Actors

Seller System

PSI

Buyer System

System (ICN Platform)

UC_S_UP_FPT (Fulfill Payment and Remittance Transaction)

UC_S_UP_FSP (Fulfill Stop Payment Transaction)

UC_S_UP_FPS (Fulfill Payment Status Transaction)

UC_S_UP_FPR (Fulfill Remittance Status Transaction)

UC_S_UP_FFR (Fulfill Payment Feasibility Transaction)

Primary Actors

Buyer System

Seller System

Intercomputer Functional Requirements Specification

5.1.4   Actors
The System interacts with the following Actors

5.1.5   Primary Actors

1.   Buyer System (B/S)

2.   Seller System (S/S)

5.1.6   Secondary Actors

1.   Bank Payment System Interface (PSI)

2.   Buyer System (B/S)

3.   Seller System (S/S)

5.1.7 Use Cases

Use Case ID	UC_S_UP_FPT		
Description	Fulfill Payment and Remittance Transaction		
Version	0.93		
Goal	Send *Payment and Remittance Request* to the System. Receive *Payment Response. Receive Remittance Status Information. Receive Remittance Accounting Instruction.*		
Scope	System		
Level	Summary		
Trigger	#	Trigger Action(s)	
	1	Buyer System provides the Request (*B/S Payment and Remittance Request*) to the System	
Pre-conditions	#	Pre-condition	
	1	Buyer set up the *Payment and Remittance Request* with the Buyer System	
Success Post-condition	#	Success Post-condition	
	1	Buyer System receives *Remittance Accounting Instruction*	
	2	Seller System receives *Remittance Accounting Instruction*	
	3	Buyer System receives *Payment Response*	
	4	Buyer System receives *Remittance Status Information*	
	5	Seller System receives *Remittance Status Information*	
Failure Post-condition	#	Failure Post-condition	
	1	Buyer System does not receive *Remittance Accounting Instruction*	
	2	Seller System does not receive *Remittance Accounting Instruction*	
	3	Buyer System receives *Payment Transfer Response*	
	4	Buyer System receives *Remittance Status Information*	

Main Success Scenario	5	Seller System receives *Remittance Status Information*			
	Step #	*Use Case ID*	*Pre-Condition*	*System Responsibility*	*Secondary Actor Responsibility*
	1	UC_PT_WE_WPI	B/S Payment and Remittance Request received by System	*Execute Payment Instruction* Workflow	
		UC_PT_WE_WRP		Execute *Payment Response Workflow*	
		UC_PT_WE_WRI		*Execute Process Remittance Status Information Workflow*	
	2	UC_S_MS_SPI	Payment Instruction created	*Send Payment Instruction* to PSI	
	3	UC_S_MS_SRP	Payment Response created	*Send Payment Response* to Buyer System	
	4	UC_S_MS_SRI	Remittance Status Information created	*Send Remittance Status Information* to Buyer System and Seller System	

Intercomputer Functional Requirements Specification

	UC_PT_WE_WFI	Payment Status Information received from PSI	Execute Process Remittance Accounting Instruction Workflow
5			
	UC_PT_WE_WRI		Execute Process Remittance Status Information Workflow
6	UC_S_MS_SFI	Remittance Accounting Instruction created	Send Remittance Accounting Instruction and Remittance Status Information to Buyer System
		Remittance Status Information created	Send Remittance Accounting Instruction and Remittance Status Information to Seller System
Extensions	Use Case ID	Condition	Branching Action Description
Sub-Variations	Use Case ID	Variation	Description

Step #	#

Intercomputer Functional Requirements Specification

1	UC_S_UP_FPT_IR	*Payment and Remittance Request Invalid*	Invalid Request data from B/S
2	UC_S_UP_FPT_IS	*Status Invalid*	Invalid *Payment Status Information* from PSI
3	UC_S_UP_FPT_WI	*Process Instruction Workflow failed*	Failed to execute *Payment Instruction* Workflow
4	UC_S_UP_FPT_WR	*Process Response Workflow failed*	Failed to execute *Payment Response Workflow*
5	UC_S_UP_FPT_WS	*Process Remittance Status Information failed*	Failed to execute *Process Remittance Status Information* Workflow
6	UC_S_UP_FPT_WF	*Process Remittance Accounting Instruction workflow failed*	Failed to execute *Process Remittance Accounting Instruction* Workflow

Priority	High
Primary Actor	Buyer System
Secondary Actor	Buyer System Payment System Interface

	Seller System	
Performance Target	All messages should have guaranteed delivery	
Frequency	As and when triggered by the Buyer System	
Super-ordinate Use Case(s)	None	
Sub-ordinate Use Cases (s)		
Channel(s) to Primary Actor	Primary Actor	Channel
	Buyer System	Not yet determined.
Channel(s) to Secondary Actor(s)	Secondary Actor	Channel
	Buyer System	Not yet determined.
	Payment System Interface	Not yet determined.
	Seller System	Not yet determined.
Open Issues		
Schedule	Scheduled for DEMO	
Assumptions	#	Assumption
	1	Payment Status Information is sent from PSI
	2	The ICN Transactions can be matched with the Payment System Transactions
	3	The ICN Transactions can be matched with the Buyer System and the Seller System Transactions
	4	Payment Status Information will indicate success or failure of a Payment System Transaction

Intercomputer Functional Requirements Specification

More information	

Use Case ID	UC_S_UP_FSP			
Description	Fulfill Stop Payment Transaction			
Version	0.93			
Goal	Send *Payment Stop Request* to the System to stop payment transaction. Receive *Payment Stop Response*. Receive *Remittance Stop Response*.			
Scope	System			
Level	Summary			
Trigger	#	Trigger Action(s)		
	1	Buyer System provides the *Payment Stop Request (B/S Payment Stop Request)* to the System		
Pre-conditions	#	Pre-condition		
	1	Buyer set up the *Payment Stop Request* with the Buyer System		
Success Post-condition	#	Success Post-condition		
	1	Payment Transaction rolled back		
	2	Buyer System received *Payment Stop Response*		
	3	Seller System received *Remittance Stop Response*		
Failure Post-condition	#	Failure Post-condition		
	1	Payment Transaction not rolled back		
	2	Buyer System received *Payment Stop Response*		
	3	Seller System received *Remittance Stop Response*		
Main Success Scenario	*Step #*	*Use Case ID*	*Pre-Condition*	*System Responsibility*	*Secondary Actor Responsibility*

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#	Use Case ID	Condition	Branching Action Description
1	UC_PT_WE_WSP	*Payment Stop Request received from the Buyer System*	Execute *Stop Payment Workflow*
2	UC_S_MS_SSP	*Payment Stop Instruction created*	Send *Payment Stop Instruction to PSI*
3	UC_PT_WE_WSR	*Payment Stop Instruction sent to PSI*	Execute *Payment Stop Response* workflow Execute *Remittance Stop Response* workflow
4	UC_S_MS_SSR	*Payment Stop Response created* *Remittance Stop Response created*	Send *Payment Stop Response* to the Buyer System Send *Remittance Stop Response* to the Seller System

Extensions	*Step #*	*Use Case ID*	*Condition*	*Branching Action Description*

Sub-Variations	*#*	*Use Case ID*	*Variation*	*Description*
	1	UC_S_UP_FSP_IR	*B/S Payment Stop Request*	Invalid Request data from B/S

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	2	UC_S_UP_FSP_WS	Stop Payment Workflow	Failed to execute Stop Payment Workflow
	3	UC_S_UP_FSP_WR	Payment Stop Response workflow	Failed to execute Payment Stop Response workflow
	4	UC_S_UP_FSP_WE	Remittance Stop Response workflow	Failed to execute Remittance Stop Response workflow
Priority	High			
Primary Actor	Buyer System			
Secondary Actor	Buyer System Seller System Payment System Interface			
Performance Target	All messages should have guaranteed delivery			
Frequency	As and when triggered by the Buyer System			
Super-ordinate Use Case(s)	None			
Sub-ordinate Use Cases (s)				
Channel(s) to Primary Actor	Primary Actor	Channel		
	Buyer System	Not yet determined.		
Channel(s) to Secondary Actor(s)	Secondary Actor	Channel		
	Buyer System	Not yet determined.		
	Seller System	Not yet determined		

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	Payment System Interface	Not yet determined
Open Issues	The Payment System Interface needs to receive the payment transaction identifier for the payment that has to be stopped. How will that be achieved?	
Schedule	Scheduled for DEMO	
Assumptions	#	Assumption
	1	*Payment Stop Request* will be defined in UVX
	2	*Payment Stop Response* will be defined in UVX
	3	*Payment Stop Instruction* will be defined in UVX
	4	*Remittance Stop Response* will be defined by Intercomputer
	5	The PSI accepts *Payment Stop Instructions*
More information		

Use Case ID	UC_S_UP_FPS				
Description	Fulfill Payment Status Transaction				
Version	0.92				
Goal	Send *Payment Status Request* to the System. Receive *Response to Payment Status Request*.				
Scope	System				
Level	Summary				
Trigger	#	Trigger Action(s)			
	1	Buyer System provides the *Payment Status Request* (*B/S Payment Status Request*) to the System.			
Pre-conditions	#	Pre-condition			
	1	Buyer set up *Payment Status Request* (*B/S Payment Status Request*) to the Buyer System			
Success Post-condition	#	Success Post-condition			
	1	Buyer System received *Response to Payment Status Request*			
Failure Post-condition	#	Failure Post-condition			
	1	Buyer System received *Response to Payment Status Request*			
Main Success Scenario	*Step #*	*Use Case ID*	*Pre-Condition*	*System Responsibility*	*Secondary Actor Responsibility*
	1	UC_PT_WE_WST	*B/S Payment Status Request received from the System*	Execute *Payment Status Workflow*	
	2	UC_PT_WE_WTR	*Payment Status workflow executed*	Execute *Process Response to Payment Status Request workflow*	

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	3	UC_S_MS_STR	Response to Status Request created	Send *Response to Payment Status Request* to B/S
Extensions	*Step #*	*Use Case ID*	*Condition*	*Branching Action Description*
				Description
Sub-Variations	*#*	*Use Case ID*	*Variation*	*Description*
	1	UC_S_UP_FPS_IR	*Status Request Invalid*	Invalid Request data from B/S
	2	UC_S_UP_FPS_WT	*Payment Status Workflow* failed	Failed to execute *Payment Status* Workflow
	3	UC_S_UP_FPS_WR	*Response to Payment Status Request* workflow	Failed to execute *Response to Payment Status Request* workflow
Priority	High			
Primary Actor	Buyer System			
Secondary Actor	Buyer System			
Performance Target	All messages should have guaranteed delivery			
Frequency	As and when triggered by the Buyer System			
Super-ordinate Use Case(s)	None			
Sub-ordinate Use Cases (s)				

Intercomputer Functional Requirements Specification

Channel(s) to Primary Actor	Primary Actor	Channel	
	Buyer System	Not yet determined.	
Channel(s) to Secondary Actor(s)	Secondary Actor	Channel	
	Buyer System	Not yet determined.	
Open Issues			
Schedule	Scheduled for DEMO		
Assumptions	#	Assumption	
	1	The System receives the payment status information from the PSI asynchronously	
	2	The System does not access the PSI directly in executing this transaction	
More information			

Use Case ID	UC_S_UP_FPR				
Description	Fulfill Remittance Status Transaction				
Version	0.92				
Goal	Send *Remittance Status Request* to the System. Receive *Remittance Status Information*.				
Scope	System				
Level	Summary				
Trigger	#	Trigger Action(s)			
	1	Initiator System (Buyer or Seller System) provides the *Remittance Status Request* to the System.			
Pre-conditions	#	Pre-condition			
	1	Initiator (Buyer or Seller) set up *Remittance Status Request* to the Initiator System			
Success Post-condition	#	Success Post-condition			
	1	Initiator receives *Remittance Status Information*			
Failure Post-condition	#	Failure Post-condition			
	1	Initiator receives *Remittance Status Information*			
Main Success Scenario	*Step #*	*Use Case ID*	*Pre-Condition*	*System Responsibility*	*Secondary Actor Responsibility*
	1	UC_PT_WE_WER	*Remittance Status Request received from the Initiator System*	Execute *Remittance Status* Workflow	
	2	UC_PT_WE_WES	*Remittance Status workflow executed*	Execute *Process Remittance Status Information* workflow	

Intercomputer Functional Requirements Specification

3	UC_S_MS_SES	Remittance Status Information created	Send Remittance Status Information to Initiator System

Extensions	Step #	Use Case ID	Condition	Branching Action Description

Sub-Variations	#	Use Case ID	Variation	Description
	1	UC_S_UP_FPR_IR	Status Request Invalid	Invalid Request data from Initiator
	2	UC_S_UP_FPR_W T	Remittance Status Workflow failed	Failed to execute Remittance Status Workflow
	3	UC_S_UP_FPR_W R	Remittance Status Information workflow	Failed to execute Remittance Status Information workflow

Priority	High
Primary Actor	Buyer System or Seller System
Secondary Actor	Buyer System or Seller System
Performance Target	All messages should have guaranteed delivery
Frequency	As and when triggered by the Buyer System or Seller System
Super-ordinate Use Case(s)	None

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Sub-ordinate Use Cases (s)		
Channel(s) to Primary Actor	Primary Actor	Channel
	Initiator System	Not yet determined.
Channel(s) to Secondary Actor(s)	Secondary Actor	Channel
	Initiator System	Not yet determined.
Open Issues		
Schedule	Scheduled for DEMO	
Assumptions	#	Assumption
More information		

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Use Case ID	UC_S_UP_FFR			
Description	Fulfill Payment Feasibility Transaction			
Status	VALID			
Goal	Send *Feasibility Request* to the System. Receive *Feasibility Response*.			
Scope	System			
Level	Primary Task			
Trigger	#	Trigger Action(s)		
	1	Buyer System provides the *Feasibility Request* to the System		
Pre-conditions	#	Pre-condition		
	1	Buyer sets up *Feasibility Request* with the Buyer System		
Success Post-condition	#	Success Post-condition		
	1	Buyer receives *Feasibility Response*		
Failure Post-condition	#	Failure Post-condition		
	1	Buyer receives *Feasibility Response*		
Main Success Scenario	*Step #*	*Use Case ID*	*Pre-Condition*	*System Responsibility*	*Secondary Actor Responsibility*
	1	UC_PT_WE_WFE	*B/S Feasibility Request received from the System*	Execute *Feasibility* workflow	
	2	UC_PT_WE_WFR	*Feasibility workflow executed*	Execute *Process Response to Feasibility Request* workflow	

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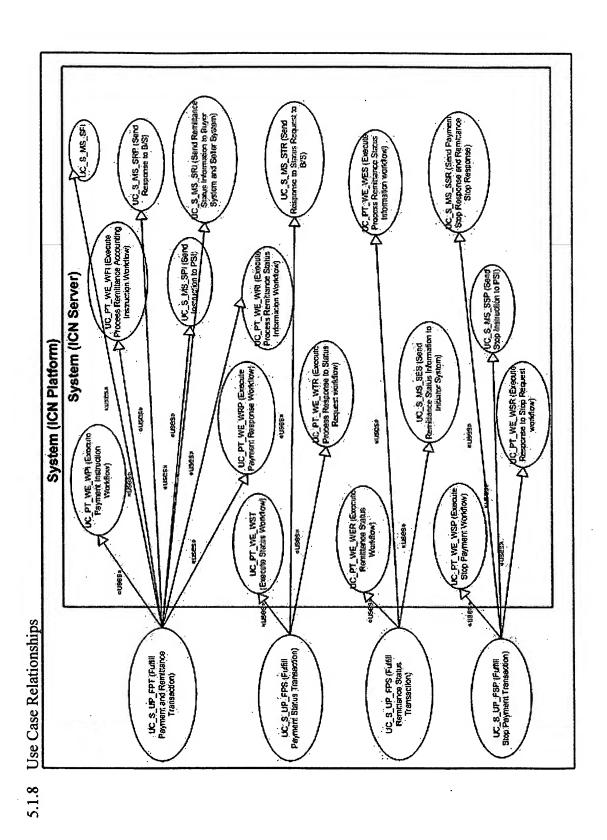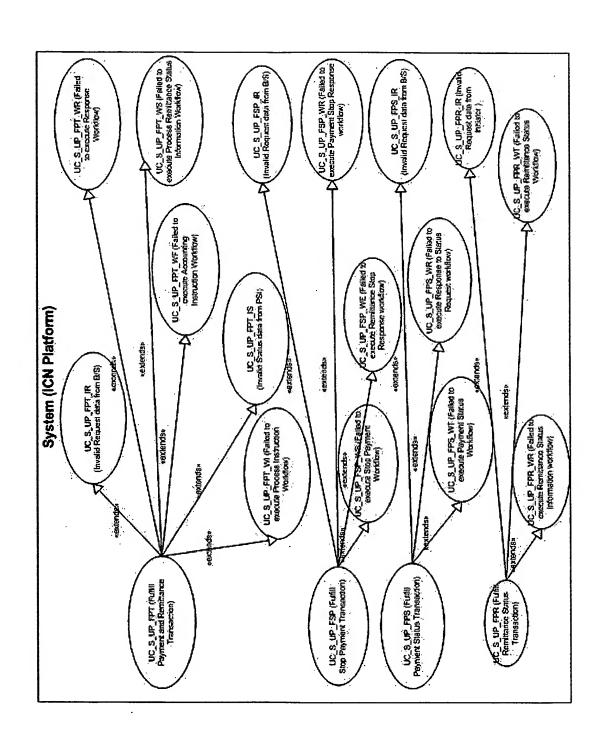
	3	UC_S_MS_SFR	Send *Response to Feasibility Request* to B/S
		Response to Feasibility Request created	
Extensions	*Step #*	*Use Case ID*	*Condition*	*Branching Action Description*

Sub-Variations	*#*	*Use Case ID*	*Variation*	*Description*
	1	UC_S_UP_FFR_IR	Feasibility Request	Invalid Request data from B/S
	2	UC_S_UP_FFR_W_F	*Payment Feasibility Workflow*	Failed to execute *Payment Feasibility* workflow
	3	UC_S_UP_FFR_W_R	*Response to Feasibility Request workflow*	Failed to execute *Response to Feasibility Request* workflow

Priority	High
Primary Actor	Buyer System
Secondary Actor	Buyer System
Performance Target	All messages should have guaranteed delivery
Frequency	As and when triggered by the Buyer System
Super-ordinate Use Case(s)	None
Sub-ordinate	

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Use Cases (s)			
Channel(s) to Primary Actor	Primary Actor	Channel	
	Buyer System	Not yet determined.	
Channel(s) to Secondary Actor(s)	Secondary Actor	Channel	
	Buyer System	Not yet determined.	
Open Issues			
Schedule	Scheduled for DEMO		
Assumptions	#	Assumption	
More information			

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5.1.8   Use Case Relationships

System (ICN Platform)

UC_S_UP_FPT_WR (Failed to execute Response Workflow)

UC_S_UP_FPT_IWS (Failed to execute Process Remittance Status Information Workflow)

UC_S_UP_FSP_IR (Invalid Request data from B/S)

UC_S_UP_FSP_WR (Failed to execute Payment Stop Response workflow)

UC_S_UP_FPS_IR (Invalid Request data from B/S)

UC_S_UP_FPR_IR (Invalid Request data from Initiator)

UC_S_UP_FPR_WT (Failed to execute Remittance Status Workflow)

UC_S_UP_FPT_WF (Failed to execute Accounting Instruction Workflow)

UC_S_UP_FPT_IS (Invalid Status data from PSI)

UC_S_UP_FSP_WE (Failed to execute Remittance Stop Response workflow)

UC_S_UP_FPS_WR (Failed to execute Response to Status Request workflow)

UC_S_UP_FPT_IR (Invalid Request data from B/S)

UC_S_UP_FPT_WI (Failed to execute Process Instruction Workflow)

UC_S_UP_FSP_WS (Failed to execute Stop Payment Workflow)

UC_S_UP_FPS_WT (Failed to execute Payment Status Workflow)

UC_S_UP_FPR_VR (Failed to execute Remittance Status Information workflow)

UC_S_UP_FPT (Fulfill Payment and Remittance Transaction)

UC_S_UP_FSP (Fulfill Stop Payment Transaction)

UC_S_UP_FPS (Fulfill Payment Status Transaction)

UC_S_UP_FPR (Fulfill Remittance Status Transaction)

«extends»
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6 Business Data Objects

The following business data objects have been identified through the use-cases

6.1 Payment Transfer Process

6.1.1 B/S Payment and Remittance Request

6.1.2 UVX Payment and Remittance Request

6.1.3 UVX Payment Response

6.1.4 B/S Payment Response

6.1.5 UVX Payment Instruction

6.1.6 PSI Payment Instruction

6.1.7 PSI Payment Status Information

6.1.8 ICN Payment Status Information

6.1.9 ICN Remittance Accounting Instruction

6.1.10 S/S Remittance Accounting Instruction

6.1.11 B/S Remittance Accounting Instruction

6.1.12 ICN Remittance Status Information

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6.2   Payment Feasibility Process

6.2.1   B/S Payment Feasibility Request

6.2.2   UVX Payment Feasibility Request

6.2.3   UVX Payment Feasibility Response

6.2.4   B/S Payment Feasibility Response

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6.3   Payment Status Process

6.3.1   B/S Payment Status Request

6.3.2   UVX Payment Status Request

6.3.3   UVX Payment Status Response

6.3.4   B/S Payment Status Response

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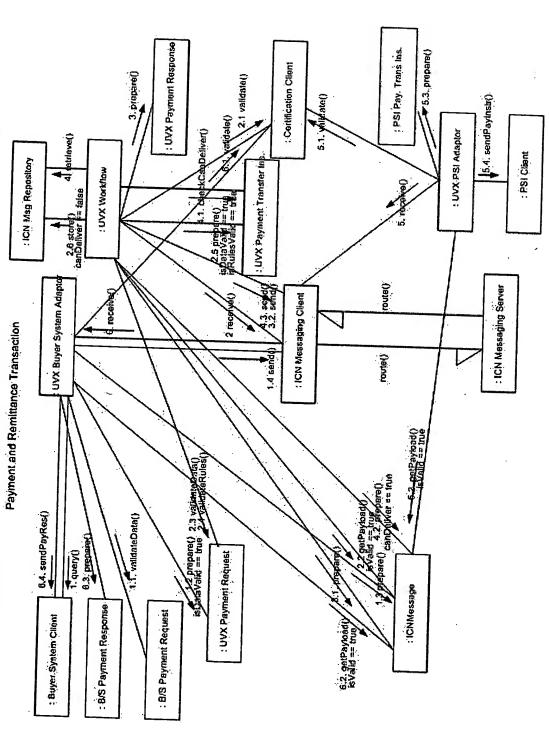
Intercomputer Functional Requirements Specification

7 Interaction Diagrams

Interaction diagrams consist of Collaboration Diagrams and Sequence Diagrams.

7.1 Collaboration Diagrams
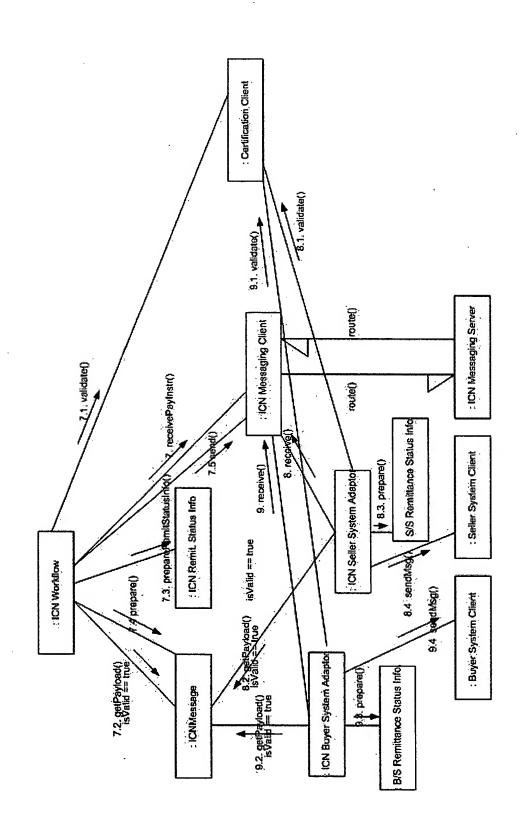
Payment and Remittance Transaction

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Payment and Remittance Transaction

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Payment and Remittance Transaction

Payment and Remittance Transaction

: ICN Payment Status Info.

11.3 isPayComplete()
11.4 isPaySuccess()
11.5 getPayDetails()

11.2 getPayload()
isValid == true

: ICN Message

11.8 * [for ICN Remit Info & ICN Acc Instr], prepare()

11.7 prepare()

: ICN Remit Status Info

: ICN Workflow

11.6 prepare()

: ICN Remit Acc Instr.

11 receive()

11.1/
send()

: ICN Messaging Client

route()

11.1 validate()

: Certification Client

route()

: ICN Messaging Server

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Payment and Remittance Transaction

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Payment Feasibility Transaction

Intercomputer Functional Requirements Specification

Payment Status Transaction

: UVX Workflow

2.3 getPaymentStatus()

2.4 prepare()

: UVX Pay Status Response

2.1 validate()

: Certification Client

3.1 validate()

: UVX Buyer System Adaptor

3 receive()

2 receive()

2.6 send()

: ICN Messaging Client

route()

1.4 send()

route()

route()

: ICN Messaging Server

2.2 getPayload()
isValid == true

2.5 prepare()

1.1 validateData()

3.4 sendResponse()

1 query()

3.3 prepare()

: Buyer System Client

- B/S Pay Status Response

1.2 prepare()
isDataValid == true

: B/S Pay Status Request

: UVX Payment Status

3.2 getPayload()
isValid == true

1.3 prepare()

: ICN Message

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Remittance Status Transaction

Intercomputer Functional Requirements Specification

Remittance Status Transaction

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Payment Stop Transaction

: Certification Client

: UVX Workflow

: PSI.Stop Trans Ins.

: UVX PSI Adaptor

: PSI Client

: UVX Stop Transfer Ins.

: UVX Payment Response

: UVX Buyer System Adaptor

: ICN Messaging Client

: ICN Messaging Server

: Buyer System Client

: BJS Pay. Stop Response

: BJS Pay. Stop Request

: UVX Pay. Stop Request

: ICN Message

2.1 validate()

4.1 validate()

3.1 validate()

3.3 prepare()

3.4 sendStopPayInstr()

2.5 prepare()
isDataValid == true
isRulesValid == true

3.5 prepare()

3 receive()

3.7 send()

2.7 send()

2 receive()

route()

route()

1.4 send()

4 receive()

3.2 getPayload()
isValid == true

3.6 prepare()

2.2 getPayload()
isValid == true

2.6 prepare()

1.3 prepare()

4.2 getPayload()
isValid == true

4.4 sendPayRes()

1. query()

4.3 prepare()

1.1 validateData()

2.3 validateData()
2.4 validateRules()

1.2 prepare()
isDataValid == true

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Payment Stop Transaction

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8 Class Diagrams

Request

S/S Request

S/S Remit Status Request

ICNRequest

ICN Remit Status Request

UVXRequest

B/S Remit Status Request

UVX Status Request

B/S Request

B/S Feasiblity Request

B/S Status Request

UVX Stop Request

B/S Pay and Remit Request

B/S Stop Request

UVX Feasiblity Request

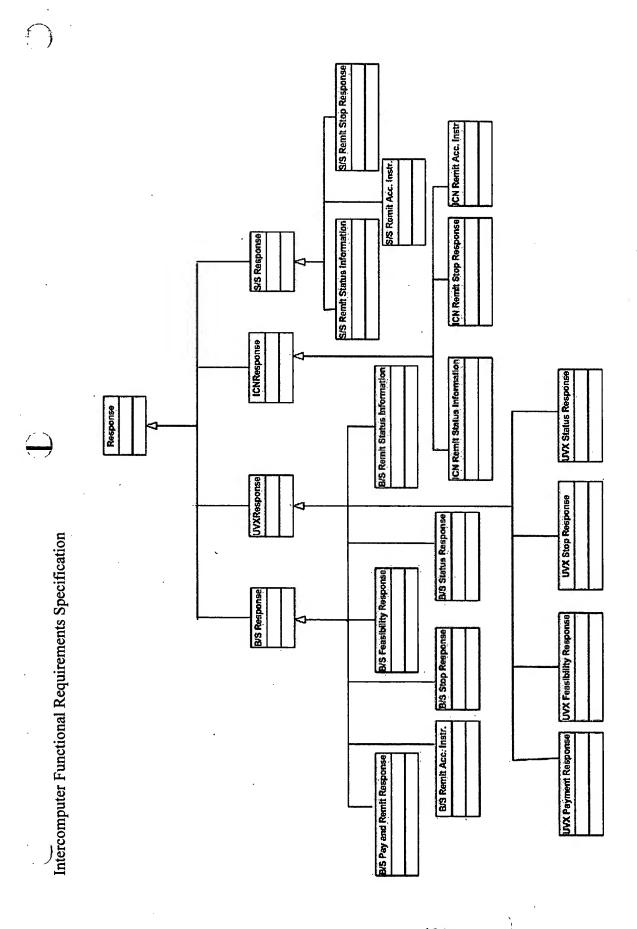UVX Payment Request

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9 State and Activity Diagrams

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10 System Requirements

The "Ideal" column indicates the System Requirements for an ideal system. The "Prototype" column indicates the System Requirements for the Demo.

System Requirement	Description	Prototype		Ideal
		Rudimentary		Extensive
Auditing	Audit trail			
	Rudimentary-			
	• Messages will be stored in the Message repository			
	• A Message auditing file will maintain ID's of messages sent, records the sender's and recipients' id's, date and time as raw data			
	Extensive			
	• Configurable auditing policy			
	• Web-based administration and reporting			
	• Messages will be stored in the Message repository			
	• A Message auditing file will maintain ID's of messages sent, records the sender's and recipients' id's, date and time, Message delivery confirmation information			
	• Transaction audit will maintain ID's of system transactions, transaction success or failure, date and			

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Intercomputer Functional Requirements Specification

	time • Message Queue auditing when the queue is created, accessed or deleted, changing queue properties		
Digital Signature Verification	Digital Signature Verification	Yes	Yes
User Interface	User Interface to the Intercomputer Network	No	Yes
Workflow	Workflow Engine	Yes	Yes
Error Management	Error Handling, Error Logging Basic-Error detection and exception handling in code, exception hierarchy, simple logging of errors Extensive –Error propagation, Error recovery, Error monitoring, reporting	Basic	Extensive
Event Logging	Logging of predefined events	Yes	Yes
Messaging		Yes	Yes
Persistence		Yes	Yes
Guaranteed Delivery		Yes	Yes
Scheduling	To be determined		
Transaction Management		Yes	Yes
Reliability	Accuracy, Availability, Recoverability	No	Yes
Response time	To be determined		
Concurrent Users	Minimum number of concurrent users to be handled	4	100
Throughput	To be determined. Expected to be around 42 million payments per day in the ideal system		

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Configurability	Pre-deployment	Yes	Yes
	Post-deployment	No	Yes
Compatibility	Compatibility with legacy systems	Yes	Yes
Scalability	Clustering, failover	No	Yes
Standards compliance	UVX, BIPS, InterBIPS JMS, Business Protocols, J2EE	Yes	Yes
Third-party components	Most likely Kenamea for the prototype	Yes	
Platform Support	Unix	Yes	Yes
Resource Limits	CPU usage	5	
External Interfaces	Certification Server, B/S, S/S, PSI	Yes	Yes
Interface formats	To be determined		
Localization		en_US	
Reporting	To be determined		

11 Assumptions

Assumption	Use Case ID
Payment Status Information is sent from PSI	UC_S_UP_FPT
The ICN Transactions can be matched with the Payment System Transactions	UC_S_UP_FPT
The ICN Transactions can be matched with the Buyer System and the Seller System Transactions	UC_S_UP_FPT
Payment Status Information will indicate success or failure of a Payment System Transaction	UC_S_UP_FPT
Payment Stop Request will be defined in UVX	UC_S_UP_FSP
Payment Stop Response will be defined in UVX	UC_S_UP_FSP
Payment Stop Instruction will be defined in UVX	UC_S_UP_FSP
Remittance Stop Response will be defined by Intercomputer	UC_S_UP_FSP
The PSI accepts *Payment Stop Instructions*	UC_S_UP_FSP
The System receives the payment status information from the PSI asynchronously	UC_S_UP_FPS
The System does not access the PSI directly in executing this transaction	UC_S_UP_FPS

12 Terminology

Primary Actor – an actor having a goal requiring an assistance of the system. The system performs a goal for the primary actor

Secondary Actor – an actor from which the system needs assistance to satisfy its goals. The system performs a goal through the secondary actor. The secondary actor corresponds with the External Entity

External Entity – An entity through which the system does something. This term has been replaced with Secondary Actor.

Success – The term Success as defined in this document indicates that the use-case goal has been achieved and the process has terminated

Failure – The term Failure as defined in this document indicates that the use-case goal has not been achieved and the process has terminated

Complete – The term Complete as defined in this document indicates that the process has terminated

Non-InterBIPS payment systems – Existing payment systems such as ACH, FedWire, ATM networks, Credit Card etc that are not based on the BIPS specification.

Buyer – the entity that interacts with the B/S. The Buyer entity does not interact with the System.

Seller – – the entity that interacts with the S/S. The Seller entity does not interact with the System.

Buyer's Approver - the entity that will approve Buyer payment requests. Every Buyer will have a designated Buyer's Approver.

Date – Date as mentioned in this document indicates DATETIME

System Date – The current DATETIME

Payment Date – The date on which the payment is to be made as per the BIPS Payment Request.

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Processing Date – The date on which the BIPS Payment Request is processed by the Intercomputer Network

Transmission Date – The date on which the payment request is transmitted from the Intercomputer Network to the Payment System Interface